

We claim:

- 1 1. A gun control system comprising:
2 a fire control kernel providing core fire control functionality that is unaffected by
3 changes within an environment external to the fire control kernel; and,
4 a plurality of location-independent software components within the fire control
5 kernel, each component having a specific functionality and able to run on any of a
6 plurality of processors in a location-independent manner.
- 1 2. The gun control system of claim 1, further comprising an infrastructure component
2 underlying the plurality of location-independent software components of the fire control
3 kernel to support the components so that each component is able to operate independently
4 of other components in the location-independent manner.
- 1 3. The gun control system of claim 1, wherein the plurality of location-independent
2 software components comprises a target/track management interface software component
3 providing access to the fire control kernel for target-related and track-related data.
- 1 4. The gun control system of claim 3, wherein the target/track management interface
2 software component accepts as input two-dimensional and three-dimensional sensor track
3 data, indirect target data, sensor status data, and target number selection and
4 reassignments.

1 5. The gun control system of claim 3, wherein the target/track management interface
2 software component provides as output sensor designation data, track data requests, and
3 smoothed target state data.

1 6. The gun control system of claim 1, wherein the plurality of location-independent
2 software components comprises a gun control system control interface software
3 component providing for control of kernel processing by a gun control operator and
4 external digital control sources.

1 7. The gun control system of claim 6, wherein the gun control system control interface
2 software component accepts as input engage controls, system doctrine, and gun control
3 operator console input controls and data values.

1 8. The gun control system of claim 6, wherein the gun control system control interface
2 software component provides as output engagement status, engagement order responses,
3 overall system status, and controls of peripheral equipment.

1 9. The gun control system of claim 1, wherein the plurality of location-independent
2 software components comprises a gun mount control interface software component
3 providing access into the fire control kernel for control of a gun mount currently in use.

1 10. The gun control system of claim 9, wherein the gun control mount control interface
2 software component accepts as input gun position and status, gun firing status, and gun
3 ammunition inventory.

1 11. The gun control system of claim 9, wherein the gun control mount control interface
2 software component provides as output deck-reference gun orders and rates, gun mount
3 controls, fire order controls, ammunition controls, and selection orders.

1 12. The gun control system of claim 1, wherein the plurality of location-independent
2 software components comprises an ownship data interface software component providing
3 access into the fire control kernel for ownship state and attitude data needed for general
4 fire control processing.

1 13. The gun control system of claim 12, wherein the ownship data interface software
2 component accepts as input ownship attitude data, ownship speed and course, ownship
3 location, and environmental inputs.

1 14. The gun control system of claim 1, wherein the plurality of location-independent
2 software components comprises a gun control system display interface software
3 component providing access into the fire control kernel for extracting display data for a
4 gun mount currently in use.

1 15. The gun control system of claim 14, wherein the gun control system display interface
2 software component accepts as input console assignment for multiple-console
3 configurations.

1 16. The gun control system of claim 14, wherein the gun control system display interface
2 software component provides as output necessary data to generate one or more fire
3 control displays.

1 17. A gun control system comprising:
2 a fire control kernel providing core fire control functionality that is unaffected by
3 changes within an environment external to the fire control kernel;
4 a target/track management interface software component located within the fire
5 control kernel and providing in a location-independent manner access to the fire control
6 kernel for target-related and track-related data;
7 a gun control system control interface software component located within the fire
8 control kernel and providing in the location-independent manner for control of kernel
9 processing by a gun control operator and external digital control sources;
10 a gun mount control interface software component located within the fire control
11 kernel and providing in the location-independent manner access into the fire control
12 kernel for control of a gun mount currently in use;
13 an ownship data interface software component located within the fire control
14 kernel and providing in the location-independent manner access into the fire control
15 kernel for ownship state and attitude data needed for general fire control processing; and,

16 a gun control system display interface software component located within the fire
17 control kernel and providing in the location-independent manner access into the fire
18 control kernel for extracting display data for a gun mount currently in use.

1 18. The gun control system of claim 17, further comprising an infrastructure component
2 underlying the target/track management interface software component, the gun control
3 system control interface software component, the gun mount control interface software
4 component, the ownship data interface software component, and the gun control system
5 display interface software component so that each component is able to operate
6 independently of other components in the location-independent manner.

1 19. A gun control system comprising:
2 kernel means for providing core fire control functionality that is unaffected by
3 changes within an environment external to the fire control kernel; and,
4 means for providing a specific functionality and located within the kernel means.

1 20. The gun control system of claim 19, further comprising at least one additional means
2 for providing additional specific functionality and located within the kernel means.